

EFFICACY REVIEW
CHEMSICO ROACH CONTROL; EPA Reg. No. 9688-67

DATE: 09/30/05

DP BARCODE: D321930

GLP: No

CHEMICAL: Chlorpyrifos (0.5%)


CHEMICAL NUMBER: 059101

PURPOSE: Provide efficacy data to support deficiencies noted in an Agency efficacy review dated November 16, 2004.

MRID: 46615401. Duckworth, C. (2005) Field Evaluation of Chemsico Roach Control in the Control of the German Cockroach. Project Number: 133/05. Unpublished study prepared by Bio Research. 11 p.

46649401. Morris, J. (2005) Performance Evaluation of Chemsico Roach Control EPA Reg. No. 9688-67 Against American Cockroaches, German Cockroaches, Oriental Cockroaches and the Eggs of German Cockroaches. Project Number: 4A. Unpublished study prepared by United Industries Corp. 8 p.

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BACKGROUND:

Chemsico Roach Control (CRC) is a ready-to-use insecticide intended for the indoor residential control of cockroaches. CRC consists of 0.07 oz bait stations that are to be placed in "out of the way" areas that are frequented by cockroaches, *e.g.*, under appliances and sinks. The recommended application rate is a minimum of ten stations in the kitchen and two in the bathroom. The number of bait stations should be increased for heavily infested areas. Efficacious claims include, "Works Immediately", "Lasts up to 3 Months", and "Kills the Eggs they Carry".

In an efficacy review dated November 16, 2004, the Agency acknowledged the absence of efficacy data necessary for the support of the label claims "works

immediately”, “works fast”, “kills up to 3 months”, “kills the eggs”, and “kills both small and large roaches”. MRID #'s 46615401 and 46649401 have been submitted in an attempt to address these deficiencies.

DATA REVIEW:

The following data review is comprised of explanations of materials and methods, and a summation of experimental results containing tables with reformatted data.

46615401. Duckworth, C. (2005) Field Evaluation of Chemisco Roach Control in the Control of the German Cockroach. Project Number: 133/05. Unpublished study prepared by Bio Research. 11 p.

The study was comprised of a treatment group and a control group, with each containing 15 replicates (apartments). Treatment groups were introduced with bait stations containing CRC (0.05% chlorpyrifos) or the industry standard Combat Quick Kill Formula (0.03% fipronil). Prior to test placement, cockroach traps were used to collect specimens. One trap was placed in each of the following six locations from all replicates of both treatment and control groups: under the stove, under the kitchen sink, under the refrigerator, the cabinet above the refrigerator, upper right cupboard from the sink, and under the bathroom sink. The collected cockroaches were used to establish a baseline for population reductions.

Upon completion of cockroach trapping, ten bait stations were introduced within the kitchens and two within the bathrooms of each of the treatment replicates. Location for bait station placement within the kitchen included: under the stove, under the sink, under the refrigerator, in the cabinet above the refrigerator, upper right cupboard from the sink, upper left cupboard from the sink, upper right cabinet from the stove, upper left cabinet from the stove, lower right cabinet from the sink, and lower left cabinet from the stove. Bathroom bait stations were placed behind the toilet and under the sink. Cockroach populations were sampled at intervals of 1, 3, 7, 14, 21, and 28 days, and 2 and 3 months after treatment and results were compared to pre-treatment counts to calculate population reductions.

Reported Results:

Table 1. Population Reduction for Both Treatment and Control Groups

	% Reduction CRC	% Reduction Combat	Control
1 DAT	48%	38%	0%
3 DAT	35%	38%	0%
5 DAT	36%	47%	0%
14 DAT	39%	43%	0%
21 DAT	40%	37%	0%
1 Month	45%	63%	0%
2 Months	69%	46%	0%
3 Months	57%	44%	0%

***percent reductions compared using Duncan's New Multiple Range Test*

The percent population reduction for CRC ranged from 35% to 69%, with the highest reduction recorded at 2 months after treatment. The percent reduction between the two treatment groups were statistically similar and were equivalent in effectiveness.

46649401. Morris, J. (2005) Performance Evaluation of Chemsico Roach Control EPA Reg. No. 9688-67 Against American Cockroaches, German Cockroaches, Oriental Cockroaches and the Eggs of German Cockroaches. Project Number: 4A. Unpublished study prepared by United Industries Corp. 8 p.

The experimental design of the first portion of the study was comprised of either 15 American, 20 German, or 15 Oriental cockroaches being placed into 10-gallon aquariums containing food, water, and harborage. The sides of the aquariums were covered in petroleum jelly and baby oil to prevent cockroach escape. Three of the aquariums were treatment groups and were introduced with a single CRC bait station, while the fourth aquarium was used as a control. The number of dead cockroaches was recorded after 24 and 48 hours.

The experimental design of the second portion of the study was comprised of 15 female German cockroaches carrying egg cases being placed into 10-gallon aquariums containing food, water, and harborage. The sides of the aquariums were covered in petroleum jelly and baby oil to prevent cockroach escape. Three of the aquariums were treatment groups and were introduced with a single CRC bait station, while the fourth aquarium was used as a control. As each cockroach died, their egg case was transferred to a capped vial. The number of egg cases hatching viable young was recorded at 24-hour intervals.

Reported Results:

Table 2. Efficacy of CRC Against Three Species of Cockroaches

	Average Kill (24-hours)	Average Kill (48-hours)
American Cockroach	67%	93%
German Cockroach	100%	-
Oriental Cockroach	73%	91%

The percent mortality after 24 hours was highest with German cockroaches, having recorded 100% dead. Both American and Oriental cockroaches had 91% or better mortality after 48 hours.

Table 3. Efficacy of CRC on German Cockroach Egg Cases

% producing viable nymphs after 18 days			
Aquarium A	Aquarium B	Aquarium C	Control
7%	13%	7%	100%

After 18 days the of percent egg cases that produced viable young ranged from 7% to 13% for each of the three treatment aquariums.

RECOMMENDATIONS:

The submitted data supports the use of Chemsico Roach Control bait stations on cockroaches in residential areas. In addition, the label claims “works fast”, “kills up to 3 months”, “kills the eggs”, and “kills both small and large roaches” are supported. The following recommendation applies:

1. The label claim “kills immediately” is not supported by the data and must be deleted from the label.